ADVANCED CORDLESS FONE POINT **TECHNOLOGIES, INC.**

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Nov. 5, 1992

Ms. Donna Searcy, Secretary
Federal Communications Commission
1919 M St. NW
Washington, DC 20054

Re: GEN Docket 90-314
ET Docket 92-100
RM-7140, RM 7175 et al

Dear Ms. Searcy:

Enclosed please find an original and eleven (11) copies in regard to the above matter.

Kindly deliver one copy to each of the commissioners.

I look forward to discussing this matter and the further advancement of ACT's interest through the agency's rulemaking processes with the proper officials in the not too distant future. I trust the commission will call me if the enclosed raises new ideas.

Thank you.

Yours very sincerely,

Marv Hirschberg, Director

MLH/gt
Enclosures

0+11

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of

Amendment of the Commissions' Rules to Establish New Personal Communications Services	)))	GEN Docket 90-314 ET Docket 92-100 RM-7140, RM 7175 et al

COMMENTS OF ADVANCED CORDLESS TECHNOLOGIES, INC

Advanced Cordless Technologies, Inc. hereby comments on the FCC's NOTICE OF PROPOSED RULEMAKING AND TENTATIVE DECISION, adopted July 16, 1992, and released August 14, 1992.

Advanced Cordless Technologies, Inc. (hereafter "ACT") is the direct successor of Cellular 21, Inc., which filed a Petition for Rulemaking, assigned number RM-7140, which led to the opening of the Notice of Inquiry and Docket 90-314. ACT was the first US firm to operate a public field trial of PCS technology at Monticello, NY. (It should be noted that Cellular 21, Inc. --ACT's predecessor -- had the first PCS experimental license, but did not conduct any experiments. It did, however, operate a PCS microcell at the FCC's offices at 2125 M Street in December 1989, for the purpose of demonstrating a prototype PCS system) Clearly, then, ACT was truly a pioneer in the PCS arena.

ACT's President has been active in various industry committees(1), and has spoken widely to promote PCS implementation in the US.

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(1) He was vice-chairman of Telocator's PCS Technical and Engineering Section.

ACT, therefore has developed an in-depth view of PCS/PCN and the new technologies and services proposed by the Commission in its "Tentative Decision" of July 16, 1992.

ACT believes that despite its good intentions, the Commission has erred seriously in its proposed PCS concepts and proposed technical rules, and has concurrently failed to reward the true "Pioneers" in PCS, including ACT.

DOCKET 92-100

The Commission's first error is, we believe, the "bundling" of the two dockets 90-314 and 92-100 into one proceeding. Although they are loosely related in that Advanced Messaging Service ("AMS")is designed to reach people with non-verbal messages (at least initially). The Commission has apparently reached the decision that such non-voice services can be given a home in the 900 MHz bands totalling 3 MHz of spectrum. As this spectrum is being drawn from a reserve, there are no incumbent users, and therefore the implementation of services can begin immediately. This distinction alone is sufficient in merit to cause the Commission to sever 92-100 from 90-314 and permit it a life of its own. The licensing issues, including number of carriers, types of services, license areas, and technical standards can be resolved independently of the 2 GHz issues which have become bogged down on sharing issues.

ACT's PIONEERING CONCEPTS AND ACTIVITIES

ACT originally proposed (in the Cellular 21 filing) that microcell-based short-range telephony be located in the 940-948 MHz range, with the first one MHz being exclusive to PCS, while the remainder up to 948 MHz being on a shared basis. An examination of Cellular 21's filing will show that the concept of sharing spectrum with existing users, coupled with new technologies such as Dynamic Channel Allocation (DCA) where the handsets constantly scan the channel pool looking for channels not in use, or if in use, of sufficiently low signal strength that mutual interference would not occur, is the "solution" others are touting as "new" and "exciting".

It is a technology highly suited for use in the proposed 2 GHz band. In fact, in comments later filed by ACT, when it became the continuation of Cellular 21's concepts, ACT demonstrated that either sharing of the Broadcast Auxilliary ("STL") band technically, or that a buyout of incumbent users might be desirable. (ACT showed in its filings that about 40% of all STL equipment in use would have to be retired or taken out of service on July 1, 1993 because it no longer met the Commission's equipment certification standards. What better time to force a move to higher frequency bands where newer technologies could be readily implemented?)

Nonetheless, the push to use the 2 GHz band was on, and the PCN bandwagon began to roll. Over time, the very concepts first proposed by ACT (and Cellular 21) became a cause celebre', championed by others but not pioneered by them. ACT was also the first to propose use of paging technology for call set up in a PCS system.

Such a network architecture, combining two technologies, is THE MOST SPECTRALLY EFFICIENT WAY of implementing PCS or PCN. It is also the most economical, and therefore the most likely to be built.(2)

ACT's VISION OF PERSONAL COMMUNICATIONS

ACT has long supported efforts to develop a system which would permit a single phone number to be used to reach a person, with the routing controlled by by the Advanced Intelligent Network, which could be programmed to have calls follow people from place to place. Acknowledgement paging systems, where a small response transmitter is built into a pager, and which would "squawk" a response to a nearby receiver, thus identifying the location where the call should be forwarded, seems to us to be the most cost effective method short of full wireless interconnectivity, to provide the type of reachability people might want. However, this type of network design would probably reduce the ever-increasing need for telephone numbers. Also, we believe that as radio telecommunications equipment shrinks even further, the space for keypads will disappear forcing a move to voice recognition.

We believe that in the future people will be called by identifying them by name and location (" get me John Doe who lives on Bay Street in Amarillo, Texas. If he's not at home, try his job; he works at the Main Post Office."). There are no obstructions, except capital, to doing this now. PCS in its second generation will be more like this than what the proposed regulations are suggesting.

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(2) APC's PCS system in Washington is built precisely this way.

WHAT IS THE COMMISSION PROPOSING?

An examination of the proposed rules for Part 99 (the new regulatory home for PCS) basically envision yet more cellular like systems. (we're ignoring for the moment the Part 15 subband).

In its bend-over-backward efforts to make the rules as flexible as possible, and in its intention to not set "standards", the Commission has instead created a quagmire of superflexibilty for licensees which assure the very failure of PCS. It has also shown its inability to conceive of any radio system architecture except cellular.

POWER LIMITS; DUPLEX CHANNEL PAIRING

In proposed Section 99.405(a)(b)(c) channels are paired into two 15 MHz wide bands, one for mobiles, and the other for base stations. In Section 99.407 (a) the Commission has yet to propose power limits, but at Paragraphs 115 and 116 it suggests powers up to 1 kW for bases and 200 Watts for Mobiles, although it acknowledges that lower poiwers will probably prevail. However, the Commission is ignoring the fact that no matter how PCS licensing occurs, that adjacent systems will have to be using similar technology or suffer possible severe interference. For example, assume that System A is licensed to an MSA and has designed a low power (10 mW) system using identical power for both base stations and mobiles; the adjacent RSA licensee is using kilowatt bases and 200 Watt mobiles. A plane flies over the intersection of the two areas. System A could be disabled for a long time because of the unexpected reflection of

the System B signal. Or suppose the system A operator has opted for a CT-2 type system where the transmitt and receive frequencies are the same, time-division duplexing taking place. Here the situation is even worse.

Interestingly enough, the 2 GHZ rules are so unworkable as proposed that the Part 15 allocation (1910-1930 MHz) actually is more suitable for PCS purposes, since it is proposes a channelization scheme, with reasonable power restraints. We fully support the Part 15 concepts of Section 15.253 (proposed), and suggest that the power, emmission, and bandwidth be incorporated into the Part 99 2 GHz spectrum.

LICENSEE QUALIFICATIONS

The Commission has proposed (by ommission) in Proposed Section 99.13 to permit foreign entities and individuals to hold Part 99 licenses. We object strongly to this provision because, if auctions are the licensing scheme finally adopted for PCS, it will amount to the sale of an asset which belongs to Americans, and which is for the benefit of all Americans, not those foreigners who can outbid domestic corporations. Should the Commission to elect to permit foreign ownership of Part 99 licenses,. then to assure a level "playing field", Part 22 licenses should have their restrictions lifted as well.

An alternative solution would be to permit foreign ownership by nationals or corporations based in countries which permit American licensses, to the same degree of participation, as permitted there. Only then would this be fair and equitable.

CELLULAR AND LEC EXCLUSIONS

The level playing field concept should extend to current Cellular Service licensees as well. Since they are under no restrictions that would prohibit them from developing PCS-like services within their own spectrum, we agree with the proposed wording of 99.13. However, since the size of the licensing area of Part 99 has not been established, the problem of "de minimus" overlap might arise. Also, the continual consolidation of cellular carriers into ever larger super-systems, leads us to believe that the day of but two cellular licensees is not far off. Therefore, we support total exclusion of cellular carriers from the 2 GHz range, including the Part 15 segment. It is important that Part 15 be added to the exclusion, since it could be used to subvert the intent.

Should the Commission choose to permit Cellular participation in Part 99 in their own markets, then we propose that cellular carriers be required to relinquish the additional spectrum they received from the cellular reserve. This "freed up spectrum" would then be made available to new cellular service providers to compete with the cellular duopoly. (We believe that with the onset of digital, there really was no need for the cellular carriers to have been granted additional reserve spectrum; so if they want more spectrum from the 2 GHz PCS pool, they should give up something).

LECs are another matter. We believe they need spectrum for various services they will need to offer in the future. Therefore we support the allocation of 10 MHz to the LEC (or LECs) in their authorized area. Power restrictions to prevent overlap with other LECs will be needed, possibly more severe than 99.409(a).

SERVICE AREAS

Since licensed Part 99 carriers will be competing with Part 22 cellular carriers, and with Part 15 operations (in the 1910-1930 MHz range), it will be difficult to provide a level playing field because of the various diffffering licensing schemes: MSAs, RSAs, trading areas, etc. Not one is really suitable for what is needed.

ACT's REVOLUTIONARY PROPOSAL

Having said all of the above, and realizing that in order for the US to remain competitive it must immediately upgrade its telephony infrastructure, including integrating wireless into the mix, we believe the Commission must resolve the following issues:

Technical Standards are needed
Licensing areas must be decided
Anti-speculation scheme must be put into place
A level playing field is needed
Pioneer preference decisions are flawed
Early implementation of PCS is needed
Auctions are not now possible because of political concerns

In examining this menu of difficult items, it becomes clear that only one licensing mechanism can work. And that is no licensing mechanism at all: Part 15 for the entire band. Carriers and service providers could cover the areas they deem economically attractive, provide the service(s) they wish, use the technology they want, subject only to the type of power and emmission regulations included in proposed rule 15.253.

ACT's METHOD OF FREQUENCY SHARING

The Commission might want to license carriers who charge for their services, to protect the public from rapacious treatment afforded them by some portions of the COCOT industry, and certainly equipment would have to be certified. In addition all equipment would have to incorporate a mechanism for avoiding interference to incumbent users of the 2 GHz spectrum for a finite time. For this, ACT had previously proposed that each Private Microwave receiving station would be equipped with a "beacon" transmitter, of controlled coverage, which would correspond to the area of susceptibility to interference, and dynamically changing its beacon "stay away" message depending on frequencies in use and level of interference. Such beacons (or "lighthouses") would be financed by the PCS providers, and would be removed from service when the band sharing time expired.

A small sliver of spectrum might have be set aside for such beacons, but their coverage would permit frequency reuse.

In this way, the faults of both other interference avoidance schemes ("FAST" and "IMASS") would be overcome, and true sharing could be economically implemented. The beacons could also be used for network control if interconnected to a central switch; their prime purpose would be to prevent interference to the Private Microwave users.

SUMMARY

ACT believes that technology has made the FCC's job easier. No longer need spectrum users (at least in the PCS 2 GHz spectrum) be regulated, except in the most minor way. No longer need the Commission spend countless person-hours maintaining order within the spectrum; deciding complex engineering, economic, and allocation issues, not to mention

the perpetual internecine fighting by licensees.

By freeing the entire 2 GHz allocation to Part 15, the Commission could avoid once and for all decisions which the free marketplace can best make.

HOWEVER, should the Commission elect to pursue regulation of PCS services by creating Part 99, then we support the issuance of five spectrum blocks, each of 20 MHz (10 base, 10 mobile), since continuing progress in developing spectrally efficient emissions will obviate the need for more bandwidth per carrier.

Again, ACT asserts that its efforts in truly pioneering PCS (admittedly on a small scale because of limited capital) merit reconsideration of ACT's pionewer preference denial. ACT is the direct descendant of Cellular 21, ACT demonstrated CT-2 type PCS as early as late 1989 at the Commission's offices, ACT operated the first outdoor and public trial of PCS technology, ACT's proposals (in the Cellular 21 filing) envisioned and proposed many of the concepts now inherent in PCS proposals. (3)

ACT does not begrudge the three recipients their awards; APC spent millions of dollars implementing the type of system ACT had proposed, and its "FAST" technology is but a reworking of the interference avoidance scheme proposed by Cellular 21. And it was Cellular 21 that proposed sharing of spectrum for PCS. (4)

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(3) A rereading of Cellular 21's Petition for Rulemaking (RM-7140) is suggested. As an example of ACT's early efforts, it was asked by Cox Cable to bid on constructing its PCS experiment because ACT had two operating systems in place. ACT was also asked to bid on construction of PCS for US West trials, and to bid on construction of Hong Kong's CT-2 system.

(4) ACT developed an extensive plan to share with broadcast STLs, or to finance their relocation to other Broadcast Auxilliary channels.

Respectfully submitted

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By: _____
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Director

November 5, 1992

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